

portions in electrical contact with respective ones of said motor-side connection portions.

REMARKS

Referencing the Office Action, paragraph 1 on page 2 indicates that the certified copy of the foreign priority document was filed in a parent application. The priority document was filed along with the original application. In the next Office Action, please acknowledge receipt of the priority document with the original application.

The Information Disclosure Statement filed with the original application has not been made of record. Attached for your convenience is a copy of previously submitted Form PTO-1449. Please provide us an initialed copy of Form PTO-1449 showing consideration of the references listed thereon. If you require additional information, please let us know.

The abstract has been amended to conform to U.S. practice. Approval is respectfully requested.

Applicant appreciates the indication of allowable subject matter in dependent Claims 7 and 8. Claims 7 and 8 are rewritten in independent form as Claims 9 and 10. The claim language has been amended to overcome the objections set forth in the Office Action and has been revised to more clearly define the invention. Allowance of Claims 9 and 10 is respectfully requested.

Claims 1-6 have been amended to overcome the objections set forth in the Office Action and to more clearly define the invention.

Claims 1-6 are rejected under 35 USC § 103 as unpatentable over Schiebold, U.S. Patent No. 5 773 903 in view of Heuer, U.S. Patent No. 4 451 750. The wiring connection device of Claim 1 is believed distinguishable from the applied prior art for the following reasons.

Schiebold discloses a motor/generator installed in the drive train of a motor vehicle acting as a hybrid drive. Schiebold does not disclose any particular mounting relationship of the electric motor to an internal combustion engine and no terminal box or other element utilized for wiring connections.

Heuer discloses a protective arrangement for a plug-connected electric motor. The electric motor construction is utilized for actuating and controlling the operation of accessories, valves, etc. in, for example, nuclear power plants. Heuer is directed to ensuring that the connection of the electric motor to a current supply is hermetically sealed. This prevents leakage of gamma radiation.

There is no motivation, absent Applicant's specification to look to the electric motor for controlling an accessory, such as a valve in a nuclear power plant of Heuer to modify the electric motor construction for the hybrid vehicle of Schiebold. The motor of Heuer is not secured to a crank shaft of an internal combustion engine and such connection is not contemplated. The environment and usage for the electric motor construction of Heuer is not related to a rotor connected by clutches to a crank shaft as in Schiebold.

Further, Claim 1 includes features distinguishing the applied prior art. Independent Claim 1 recites that "a terminal box having vertical walls directed in an outward radial direction is monolithic with said motor case". This feature is not present in the applied prior art. As discussed above, Schiebold discloses no details of the wiring arrangement. Column 3, lines 5-6 of Heuer discloses a terminal box mounted onto a motor housing. Thus, the terminal box 6 of Heuer is a separate element and not monolithic with the motor housing 1.

Dependent Claims 2-6 further distinguish the applied prior art. Heuer shows a single current supply cable entering into a female connector part mounted above the terminal box.

Dependent Claim 2 recites that "inner surfaces of said vertical walls of said terminal box are covered with molding and a portion of the terminal box is free from molding". This arrangement differs from Figure 1 of Heuer which shows the entire terminal box 6 containing molding material.

Dependent Claim 4 recites "a motor wire insertion hole, into which the motor-side coil wire is inserted and crimped, and is formed in said coil wire retaining portion". No such crimping arrangement is disclosed or shown in Heuer or Schiebold. Claim 4 further recites that "a knurl-stop portion, embedded in the molding, is formed in said motor-side connecting portion". The applied prior art does not disclose, teach or suggest a knurl-stop portion formed in the motor-side connection portion, much less embedded in molding.

Dependent Claim 5 recites that "a plating liquid hole is formed in one side of the coil wire retaining portion". No such feature is present in the applied prior art.

Dependent Claim 6 recites "a base-side cable retaining portion and a cable-side connecting portion; a cable wire insertion hole, in which a core of a power supply cable is inserted and crimped". This arrangement is not present in the applied prior art.

For the above reasons, reconsideration and allowance of Claims 1-6 is respectfully requested.

Added Claims 11-21 further distinguish the applied prior art. Claims 11-13 recites specific structures for the knurl-stop portion(s). The applied prior art does not disclose a knurl-stop portion, much less the knurl-stop portions recited in Claims 11-13 which correspond to the arrangements shown in Applicant's Figures 10-12.

Dependent Claim 14 recites "connector mating holes in one of said vertical walls, wherein each said mating hole has a different shape". This feature shown in Applicant's Figure 14 is not present or suggested in the applied prior art.

Dependent Claim 15 recites "a single terminal retainer having insulating properties and a joining hole and ring-shaped insulating portions with an inner diameter equal to the first inner diameter, said terminal retainer retaining said cylindrical-shaped motor-side connection portions aligned therein between the ring-shaped insulating portions so that the joining hole includes motor-side connection portions spaced along the length thereof". The applied prior art does not disclose or suggest a joining hole having cylindrical-shaped motor-side connection portions having a first inner diameter spaced along a length thereof as illustrated in Applicant's Figure 15.

Applicant's independent Claim 16 recites a combination of elements including an engine, a rotor mounting member, and an electric motor. This combination of features is not disclosed or suggested in Heuer. Thus, as set forth above, there is no motivation to combine selected features from the protective arrangement for sealing against radiation of Heuer with the electric machine of Schiebold.

Claim 16 further recites "molding material receiving said motor-side connection terminals and extending about part of the aperture portion and contacting inner surfaces of the walls of said terminal box". As discussed above, Heuer discloses the entirety of the terminal box being filled with resin.

Dependent Claims 17-21 are allowable for the reasons set forth above with respect to parent Claim 16 and further distinguish the applied prior art as follows. Independent Claim 17 recites that "said terminal box includes a plurality of connector mating apertures in one of the walls thereof" and

"a plurality of power supply cables ending at cable side connection terminals and having connector side mating portions, each said connector side mating portion mating with one of said mating apertures in the wall of said terminal box". This arrangement is not present in the applied prior art.

Claim 18 recites that "said motor side connection terminals include closed bore connection holes and said cable side connection terminals include cable side connecting portions with open connection apertures, said open connection apertures being in alignment with said connection holes so that respective connection members extend through respective ones of said open connection apertures and are secured in respective ones of said closed bore connection holes". This arrangement does not appear to be present in the applied prior art.

Dependent Claim 19 recites that "said terminal box is monolithic with said motor casing". As discussed above, the terminal box 6 of Heuer is a separate element from the motor housing 1.

Dependent Claim 20 recites that "said motor side connection terminals include cylindrical-shaped motor-side connection portions each having a first inner diameter" and "a motor-side terminal retainer having insulating properties and a joining hole and ring-shaped insulating portions with an inner diameter substantially equal to the first inner diameter, said terminal retain retaining said plurality of motor-side connection terminals therein positioned between the ring-shaped insulating portions and aligned so that the joining hole includes motor-side connection portions spaced along the length thereof". This arrangement shown in Applicant's Figure 15 is not disclosed or suggested by the applied prior art.

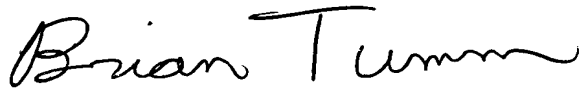
Dependent Claim 21 recites "said cable-side connection portions having U-shaped cross-section with an outer diameter slightly larger than the inner diameter of said cylindrical-shaped motor-side connection portions" and "a cable side retainer receiving cores of said cable-side connection portions, and insulating portions of said cable side retainer spaced between said cable-side connection portions so that said cable side retainer is capable of being inserted in said motor-side terminal retainer in said terminal box with respective ones of said cable-side connection portions in electrical contact with respective ones of said motor-side connection portions". This arrangement is not disclosed or suggested by the applied prior art.

For the above reasons, allowance of Claims 11-21 is respectfully requested.

Pursuant to 37 CFR § 1.121, attached hereto are marked up copies showing the changes made to Claims 1-6.

Favorable reconsideration of this application and allowance of Claims 1-6 and 9-21 is respectfully requested.

Respectfully submitted,



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Encls: Marked Up Abstract
Replacement Abstract
Marked Up Claims 1-6
Copy of Form PTO-1449
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ABSTRACT OF THE DISCLOSURE

~~Objects of this invention are to reduce costs,~~
~~improve ease of operation, improve the water resistance~~
~~within the terminal case, and improve reliability. To~~
~~these ends, in this invention the~~A ~~motor stator of an~~
electric motor is mounted in a motor case ~~which~~that is
mounted on the cylinder block of an engine; ~~the.~~ A motor
rotor of the electric motor is mounted on a rotor
mounting member which is mounted on the engine
crankshaft; ~~on the.~~ An outer periphery of the motor case
periphery wall of the motor case is formed ~~a~~integral with
a terminal box, ~~with~~ having vertical walls ~~standing~~
~~integrally, and having~~and an aperture portion directed in
~~the~~an outward radial direction; ~~in the.~~ The motor case
periphery wall, enclosed by the vertical walls, is formed
with a motor-side through hole, directed in the outward
radial direction; ~~on the.~~ The motor-side coil wire is
mounted to a motor-side connection terminal; ~~this motor-~~
~~side connection terminal~~ that is embedded and retained in
the motor-side through hole by molding, ~~and by means of~~
~~this.~~ The molding seals the motor-side through hole ~~is~~
sealed.



1. (Amended) A wiring connection device, wherein a substantially cylindrical-shape motor case is mounted on ~~thea~~ a cylinder block of an engine; ~~thea~~ a motor stator of an electric motor having an electricity generation function is mounted in ~~this~~ the motor case; on ~~thea~~ a crankshaft of ~~said~~ the engine is mounted a rotor mounting member; ~~thea~~ a motor rotor of ~~said~~ the electric motor is mounted on ~~this~~ the rotor mounting member; a terminal box, having ~~substantially the shape of a square cylinder and with~~ vertical walls standing integrally, and having an aperture portion directed in ~~thean~~ an outward radial direction is ~~formed on the outer periphery of the case periphery wall of~~ monolithic with said motor case, said vertical walls defining an aperture portion extending from an outer periphery of said motor case; a motor-side through hole, directed in the outward radial direction and which communicates inside and outside of said motor case is formed in ~~thea~~ a motor case periphery wall and enclosed by said vertical walls; a motor-side connection terminal is mounted on a motor-side coil wire drawn out from said motor stator, the motor-side connection terminal is embedded and ~~held~~ retained by molding within said motor-side through hole; and said motor-side through hole is sealed by ~~means of this~~ the molding.

2. (Amended) The wiring connection device according to claim 1, wherein ~~the~~ inner surfaces of ~~thesaid~~ the vertical walls of said terminal box are covered with molding and a portion of the terminal box is free from molding.

3. (Amended) The wiring connection device according to claim 1, wherein ~~respective~~ the motor-side connection terminal comprises one of a plurality of motor-side connection terminals areand the motor-side coil wire comprises one of a plurality of motor-side coil wires, said motor-side connection terminals being attached to are respective ones of said plurality

of motor-side coil wires drawn out from said motor stator; ~~this~~said plurality of motor-side connection terminals ~~is being~~ embedded and retained in the motor-side through hole and in the terminal box by ~~means of the~~ molding; respective cable-side connection terminals are attached to a plurality of power supply cables, each electrically connected to a respective one of said plurality of motor-side coil wires; and, insulating portions are formed between said plurality of motor-side connection terminals and between said plurality of cable-side connection terminals, ~~respectively connected to this~~ones of said plurality of motor-side connection terminals.

4. (Amended) The wiring connection device according to claim 1, wherein said motor-side connection terminal ~~is constituted by~~comprises: a base-side coil wire retaining portion and a tip-side motor-side connecting portion; a motor wire insertion hole, into which the motor-side coil wire is inserted and crimped, and is formed in said coil wire retaining portion, directed in ~~the~~an axial direction; a connection screw hole in which is screwed ~~the~~a connection bolt of said motor-side connecting portion ~~is formed, directed in the axial direction;~~ and, a ~~whirl-stop~~knurl-stop portion, embedded in the molding, is formed in said motor-side connecting portion.

5. (Amended) The wiring connection device according to claim 4, wherein a plating liquid hole is formed in one side ~~in the radial direction of~~ the coil wire retaining portion of said motor-side connection terminal, enabling ~~the~~inflow of plating liquid into the coil ~~wire insertion hole~~retaining portion; and, after plating, the motor-side coil wire is inserted into the coil wire insertion hole, said coil wire retaining portion is crimped from the side in the radial direction opposing the plating liquid hole, so that the motor-

side coil wire is attached in the coil wire retaining portion
~~while being pressed against thereto.~~

6. (Amended) The wiring connection device according to claim 1, ~~wherein said~~including a cable-side connection terminal ~~is constituted by~~comprising a base-side cable retaining portion and ~~a tip-side~~ cable-side connecting portion; a ~~motor~~cable wire insertion hole, in which ~~the~~a core of a power supply cable is inserted and crimped, is formed in said cable retaining portion, ~~directed in the axial direction~~; and, a connection through hole, ~~through which is passed~~ said receives a connection bolt, is formed in said cable-side connecting portion, ~~directed in a direction intersecting the axis.~~